

IN THE UNITED STATES PATENT AND TRADEMARKS OFFICE**RE:****Application No.10/761,307****Applicant : DUBREUIL, Richard E.****Filed: 01/22/2004****Title: Wall Structure System****Examiner: Mohamed H. ALI****Art Unit: 3609****Oct 1, 2007****Commissioner for Patents****P.O. Box 1450****ALEXANDRIA. VA. 22313-1450****DECLARATION**

I, Richard E. Dubreuil, a Canadian citizen residing in Sault St Marie, Ontario, Canada hereby Declare and state that:

- 1. I am the inventor of the subject Application for patent;**
- 2. I am employed in the manufacture of wood-based fibrous wall board, and have been so engaged for the past ten years;**
- 3. I have had wide experience over the course of thirty years in the fabrication and erection of orthodox wood frame structures, such as homes.**
- 4. I have carefully read and re-read the Leung patent Application (publication US 2002/0046514) and wish to comment in regard thereto:**

Leung has devised a corner-braced shear panel for a window frame construction, illustrated in his Figs 1-4 as having a series of generally short corner braces that are doubled or tripled, to maintain the lateral stability of the frame against shearing forces that tend to collapse the frame sideways. As a consequence, his brace members are inclined at angles in the range of 25 to 50 degrees from the horizontal, so as to provide a major horizontal thrust component to resist such lateral shearing forces. Leung does NOT

provide continuous brace members that extend the full span or the full height of his framework. Furthermore, his use of toothed nailing plates (see his Figs 6 and 7) ties his upper strut members rigidly to his frame side members, so as to effectively preclude the transfer of vertical thrust forces from one diagonal thrust member to an adjoining diagonal thrust member, as taught in my present application.

The purpose of my invention is to provide a standardized wall or floor panel having slender struts that are subject to buckling when compressively loaded, where the struts are initially deformed into a series of adjoined segments that extend from one end of their enclosing framework to the other end, to form continuous struts, but where the thrust capacity of each segment is multiplied by shortening the length of the segment. The segments are stabilized laterally by mutual reaction forces with adjoining segments, with (the low) lateral forces being ultimately contained by the sides of the framework.

Thus, with four equal segments of a continuous strut, each will have about four times the load capacity of the parent strut. The slight inclination of the segments serves to diminish their capacity by about 8%, to give a strut load capacity of about 365 % of the original, unsegmented parent strut member.

While Leung provides great shearing strength to his frame, he contributes little to the vertical load-bearing capacity of his frame, due to the angles of his reinforcement struts.

In the case of my segmented struts, they provide virtually no shear reinforcement to the framework.

In the case of Leungs Figure 5 and Figure 11 embodiments, these are provided to resist upward, tensile loadings, such as upward wind loading on roofs, etc (Page 3 , para 0035 and Page 4, para 0042), where again, his strut members are inclined in a range of about 25

to 50 degrees from the direction of applied force (i.e. – vertical). A tensile rod connection 100 and vertical straps 66 are also involved for this purpose.

One more very important point about Leung's application, with plates, lots of small wood pieces and nails, make it a labour intensive, complex and very expensive wall structure.

My wall sections can be mass produced and shipped un-erected as a collapsible wall.

The application of foam as buckling reinforcement to my strut segments is then carried out by foaming in-situ, with consequent optimum development of the compressive strength of the foam, and maximized stabilization of my strut segments.

5. In the case of Kirk (US5210990) he uses glue as additional reinforcement to a nailed joint in the traditional manner, but he does not use glue on the side edges of his members, intermediate their ends, to secure them to a facing panel, in the manner I have disclosed for some of my constructions. I see nothing in Kirk's patent that would have led me in the direction I took, of stabilizing my flexible strut members against lateral twisting, by gluing their lateral edges to the inside surface of the abutting facing panel. Kirk's C-section composite struts, in my considered opinion, would be most unlikely to experience any significant degree of lateral twisting, due to the cross-sectional form of his composite C-section, and the respective thicknesses of his timbers.

6. In the case of combining the teachings of Cable (US 4235054) with those of Leung, it is noteworthy that Figures 2 and 12 of Cable show a C-section rigid bar 55, which does not extend laterally as far as the frame walls of his construction, and cannot therefore serve as a brace, but merely as a lateral tie for the three penetrated studs (Fig 2) And there is NO access provision illustrated for the insertion of Cable's reinforcing bar 55, which is rigid and cannot possibly be inserted into the position as illustrated, in actual practice.

Furthermore, the necessary provision in Cable's stud members of apertures to receive his bracing bar 55 introduces a significant weakening of his studs at precisely their point of tied reinforcement.

It is noted that the Examiner has introduced the phrase "laterally extending tension member (55) in describing Cable's " structural member such as a black iron bar 55 (Col 5, lines 61-64) . . . to provide reinforcing to the wall section 10". Securement of the iron bar or furring channel 55 by way of wire twists 57 lends further doubt to its credibility.

7. In the case of Griffin (US6263628), this is a poured concrete wall structure having a foam core 12, provided primarily for purposes of sound and thermal insulation.

Griffin recites sound insulation as a function of his insulative foam layer of medium density polystyrene or polyurethane (Col2, lines 65), together with "the additional function of assisting in properly distributing the concrete in its field installation."

It is respectfully suggested that the Examiner is drawing an erroneous inference from the presence and nature of the foam. Griffin, as stated before, is silent concerning any role of his sound-and-thermal insulation foam sheet in stabilizing his C-studs.

Griffin provides spacers 54 located between the inner surfaces of siding members 52 and the foam core 12, to maintain the foam core 12 in centered relation, with its side edges engaged by the C-studs 28 (Col 5, Lines 1-8).

The wall structure is completed when adjoining panels, with re-bar installed in place, are then filled with concrete (Col 6, Lines 50-54), to fill both faces of the core 12.

It is evident from an engineer's point of view that Griffin has to use a foam core of high compressive strength, due to the pouring of the cement filler that forms his concrete, which liquid cement generates high hydraulic pressure against the foam core, and if unbalanced,

tends to impale the foam core upon the centering spacers 54 and push the core off-center.

The high strength core also resists the scouring effects of the poured cement.

There is no teaching of the foam core serving as buckling stabilizers for C-studs 28 (Col 6 lines 24-27), particularly as there is no likelihood of any significant external load being applied to the Griffin wall structure so as to cause any buckling, prior to the wall being completed by the installation of re-bar and the pouring of cement to form the concrete.

It is evident that buckling stabilization of the C-studs 28 is provided by the poured concrete, upon completion of the structure, prior to the application of structural loads.

The inference from Griffin, of the use of medium density expanded polymeric material to provide buckle reinforcement to structural strut members, is adduced solely by the

Examiner, in hindsight, from the teachings of the present invention.

Signed at Sault St Marie, Ontario, Canada, this 1st day of October, 2007



Richard E. Dubreuil

